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EXAMINER

ART UNIT PAPER NUMBER  
*0022*

DATE MAILED:

03/07/95

This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS

This application has been examined  Responsive to communication filed on *11/25/94*  This action is made final.

A shortened statutory period for response to this action is set to expire *-3-* month(s), *-0-* days from the date of this letter.  
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- |   |  |
|---|--|
| <input type="checkbox"/> Notice of References Cited by Examiner, PTO-892.         | <input type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449.              | <input type="checkbox"/> Notice of Informal Patent Application, PTO-152.       |
| <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474.. | <input type="checkbox"/> _____   |

Part II SUMMARY OF ACTION

1.  Claims *1-13* are pending in the application.  
Of the above, claims \_\_\_\_\_ are withdrawn from consideration.
2.  Claims \_\_\_\_\_ have been cancelled.
3.  Claims \_\_\_\_\_ are allowed.
4.  Claims *1-13* are rejected.
5.  Claims \_\_\_\_\_ are objected to.
6.  Claims \_\_\_\_\_ are subject to restriction or election requirement.
7.  This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8.  Formal drawings are required in response to this Office action.
9.  The corrected or substitute drawings have been received on \_\_\_\_\_. Under 37 C.F.R. 1.84 these drawings are  acceptable;  not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10.  The proposed additional or substitute sheet(s) of drawings, filed on \_\_\_\_\_, has (have) been  approved by the examiner;  disapproved by the examiner (see explanation).
11.  The proposed drawing correction, filed \_\_\_\_\_, has been  approved;  disapproved (see explanation).
12.  Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has  been received  not been received  been filed in parent application, serial no. \_\_\_\_\_; filed on \_\_\_\_\_.
13.  Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14.  Other

EXAMINER'S ACTION

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1. 35 U.S.C. § 101 reads as follows:

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title".

2. Claims 1-13 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth in the two-step Freeman test given in In re Walter, 205 USPQ 397 (CCPA 1980) and In re Abele, 214 USPQ 682 (CCPA 1982). See In re Meyer, 215 USPQ 193,198 (CCPA 1982).

The first step of determining the Freeman-Walter-Abele test is to determine whether or not the claims directly or indirectly recite a mathematical algorithm.

As can be seen by claims 1-13, these claims directly recite a method for detecting the presence of a vehicle by using equations which form a mathematical algorithm.

Once the first step of the Freeman-Walter-Abele test is met the claim as a whole must be analyzed as to whether or not the claim preempts the algorithm. See In re Abele, 214 USPQ 682, 685 (CCPA 1982), as supported by In re Iwahashi, 12 USPQ 2d 1908, 1911 (CAFC 1989) and In re Grams, 12 USPQ 2d 1824, 1827 (CAFC 1989). In order to make this determination, the claims should be viewed without the mathematical algorithm to determine if what

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remains is otherwise statutory ( In re Abele, 214 USPQ 682, 686 and In re Grams, 12 USPQ 2d 1824,1827 ).

Rewriting claims 1-13 without the mathematical step(s), we have the following claims:

In claim 1: a vehicle detector in which vehicles are detected by an inductive sensor comprising the steps of detecting entry of a vehicle, determining a speed, producing a sample measurement value, comparing the measurement value with a reference value and adjusting the reference value.

In claim 2: a vehicle detector in which vehicles are detected by an inductive sensor comprising the steps of determining a time rate of change of inductance and determining a magnitude of change.

In claim 3: a vehicle detector in which vehicles are detected by an inductive sensor comprising the steps of setting the reference value with respect to a predetermined threshold.

In claim 4: a vehicle detector in which vehicles are detected by an inductive sensor comprising the steps of setting the reference value equal to an average of the measurement values.

In claim 5: a method of checking a reference value comprising the steps of measuring frequency of an oscillator signal, indicating presence when the difference between the measurement value and reference value exceed a threshold,

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measuring vehicle speed, taking a sample measurement and adjusting the reference value.

In claim 6: adjusting the reference value comprising determining a difference, adjusting the reference value, producing a predetermined number of measurement values, comparing the values, averaging the values and adjusting the value based upon the average.

In claim 7: in a vehicle detector which senses the presence of a vehicle with an inductive sensor comprising measuring inductance of a dummy sensor and comparing currently measured inductance with previously measured inductances.

In claim 8: a method of identifying a cause of change in the oscillator signal comprising the steps of connecting the oscillator to a dummy sensor, measuring frequency of an oscillator signal, comparing the frequency, and recognizing the frequency change.

In claim 9: a method of identifying changes in an inductive sensor comprising setting a second threshold, measuring the inductance and identifying the existence of mechanical difficulties.

In claim 10: a method of identifying changes in an inductive sensor comprising measuring a change in frequency, determining if the rate of frequency corresponds to normal operations and

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providing a signal indicating the existence of mechanical difficulties.

In claim 11: a method of adjusting a reference value comprising measuring a change of the measured value, comparing the change and producing a new reference value.

In claim 12: producing the new value if the average change is less than the threshold change.

In claim 13: a method of adjusting a reference value comprising measuring a change of the measured value, comparing the change and producing a new reference value.

Taking each claim as a whole, we have the following:

(1) a field of use limitation of detecting the presence of a vehicle

(2) data gathering of detecting entry of a vehicle, determining a speed, producing a sample measurement value and comparing the measurement value with a reference value, and

(3) post-solution activity of adjusting the reference value

As to the field of use, the court has held that a field of use limitation cannot make a claim statutory by "attempting to limit the use of the formula to a particular technological environment." Diamond v. Diehr, 209 USPQ 1,10 (S Ct 1981). Thus,

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the field of use limitation of claims 1-13 fails to render the claim statutory.

As to the data gathering, that is, providing data needed by the algorithm, the court has held that:

" No mathematical equation can be used as substituting values for the variables expressed therein. Substitution of values dictated by the formula has thus been viewed of as a form of mathematical step. If the steps of gathering and substituting values were alone sufficient, every mathematical equation, formula, or algorithm having any practical use would be per se subject to patenting as a " process" under 35 USC 101.

Consideration of whether the substitution of specific values is enough to convert the disembodied ideas present in the formula into an application of the formula, is foreclosed by the current state of the law. "

In re Sarker, 200 USPQ 132,139 (CCPA 1978) , In re Grams, 12 USPQ 2d 1828. The courts go further in In re Christensen, 178 USPQ 35, 37-38 (CCPA 1973) :

" Given that the method of solving a mathematical equation may not be the subject of patent protection, it follows that the addition of the old and necessary antecedent steps of establishing values for the variables in the equation cannot convert the unpatentable method to patentable subject matter."

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See In re Richman 195 USPQ 340, 343 (CCPA 1977), and In re Meyer 215 USPQ 193, 195 (CCPA 1982).

As to the post-solution activity, the courts have held that any non-essential "post-solution" activity fails to render the claims statutory. See Parker v. Flook, 198 USPQ 193, 197 (S Ct 1978). Many different types of insignificant post-solution activity have been dealt with by the courts, including

- a) the display of the analog equivalent of a number (a shade of gray), In re Walter, 205 USPQ 397, 409 (CCPA 1980);
- b) the transmission of data, In re de Castelet, 195 USPQ 439, 446 (CCPA 1977); and
- c) the updating of an alarm limit, Parker v. Flook.

The adjustment of a reference value is of this type and is therefore insignificant post-solution activity.

It is readily apparent that when claims 1-13 are each taken as a whole, they are directed to the preemption of a mathematical algorithm, and thus are non-statutory.

3. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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The specification is objected to under 35 U.S.C. § 112, first paragraph, as failing to provide an enabling disclosure as was stated in the last office action.

4. Claims 1-13 are rejected under 35 U.S.C. § 112, first paragraph, for the reasons set forth in the objection to the specification as was stated in the last office action.

5. Claims 1-13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 5,278,555 as was stated in the last office action.

6. Applicant's arguments filed 11-25-94 have been fully considered but they are not deemed to be persuasive.

Arguments:

1) Applicant argues that the specification and drawings are sufficient to enable one of ordinary skill in the art at the time the invention was made to make and use the invention and cites various passages throughout the specification to support this argument.

2) Applicant argues that the rejection of claims 1-13 under the judicially created doctrine of obviousness type double patenting over claims 1-17 of Hoekman '555 be withdrawn.

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Responses:

- 1) Applicant's argument is not persuasive since none of the cited passages by the Applicant refer to any control circuitry, block diagrams and/or flowcharts. The cited passages, as well as the remaining specification, show various mathematical calculations that are performed by a processor. Therefore, merely stating that various programs are carried out by a processor does not enable one of ordinary skill in the art to make and use the invention.
- 2) As was stated in the last office action, although the claimed invention and '555 have various calculations performed by the same processor, both the claimed invention and '555 include the same structural elements. Therefore, one of ordinary skill in the art at the time of the invention would have readily recognized that the programming of a processor does not constitute an inventive step.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Lefkowitz whose telephone number is (703) 305-4816. The examiner can normally be reached on Monday-Thursday from 8:00AM-5:30PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Peng, can be reached on (703) 305-4392. The fax phone number for this Group is (703) 305-9508.

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Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4750.

EL

Edward Lefkowitz  
March 5, 1995

Brent Swarthout

BRENT SWARTHOUT  
PATENT EXAMINER  
GROUP 2600